CLAIMS

1. A biocompatible tissue implant for repairing a tissue injury or defect, comprising:

a biological tissue slice having a geometry suitable for implantation at the tissue site, the tissue slice including an effective amount of viable cells, and further being dimensioned so that the cells can migrate out of the tissue slice to proliferate and integrate with tissue at the injury or defect.

2. The implant of claim 1, wherein the tissue slice comprises autogeneic tissue, allogeneic tissue, xenogeneic tissue, and combinations thereof.

3. The implant of claim 1, wherein the tissue slice is obtained from a tissue type selected from the group consisting of cartilage, meniscus, tendon, ligament, intestinal, stomach, bladder, alimentary, respiratory, genital, liver, dermis, synovium, and combinations thereof.

4. The implant of claim 1, wherein the tissue slice has a thickness less than about 3 mm.

5. The implant of claim 4, wherein the tissue slice has a thickness less than about 1 mm.

6. The implant of claim 5, wherein the tissue slice has a thickness in the range of about 200 μm to about 500 μm.

7. The implant of claim 1, further including a plurality of tissue slices joined together to form a layered implant of a desired size and geometry.

8. The implant of claim 1, further including a retaining element for securing the tissue slice to the tissue site.

9. The implant of claim 8, wherein the retaining element is selected from the group consisting of fasteners, staples, tissue tacks, sutures, adhesives, and combinations thereof.

10. The implant of claim 9, wherein the retaining element is an adhesive selected from the group consisting of selected from the group consisting of hyaluronic acid, fibrin glue, fibrin clot, collagen gel, collagen-based adhesive, alginate gel, crosslinked alginate, gelatin-resorcin-formalin-based adhesive, mussel-based adhesive, dihydroxyphenylalanine (DOPA)-based

adhesive, chitosan, transglutaminase, poly(amino acid)-based adhesive, cellulose-based adhesive, polysaccharide-based adhesive, synthetic acrylate-based adhesives, platelet rich plasma (PRP), platelet poor plasma (PPP), PRP clot, PPP clot, blood, blood clot, polyethylene glycol-based adhesive, Matrigel, Monostearoyl Glycerol co-Succinate (MGSA), Monostearoyl Glycerol co-Succinate/polyethylene glycol (MGSA/PEG) copolymers, laminin, elastin, proteoglycans, and combinations thereof.

11. The implant of claim 1, further including at least one minced tissue fragment containing a plurality of viable cells.

12. The implant of claim 11, wherein the at least one minced tissue fragment is delivered in a biological or synthetic hydrogel selected from the group consisting of hyaluronic acid, fibrin glue, fibrin clot, collagen gel, collagen-based adhesive, alginate gel, crosslinked alginate, chitosan, synthetic acrylate-based gels, platelet rich plasma (PRP), platelet poor plasma (PPP), PRP clot, PPP clot, blood, blood clot, Matrigel, agarose, chitin, chitosan, polysaccharides, poly(oxyalkylene), a copolymer of poly(ethylene oxide)-poly(propylene oxide), poly(vinyl alcohol), laminin, elastin, proteoglycans, solubilized basement membrane, or combinations thereof.

13. The implant of claim 11, wherein the at least one minced tissue fragment has a particle size in the range of about 0.1 mm^3 to about 2 mm^3.

14. The implant of claim 1, further including a biocompatible tissue scaffold.

15. The implant of claim 14, wherein the tissue scaffold is bioresorbable.

16. The implant of claim 14, wherein the tissue scaffold is formed from a material selected from the group consisting of a synthetic polymer, a natural polymer, an injectable gel, a ceramic material, autogeneic tissue, allogeneic tissue, xenogeneic tissue, and combinations thereof.

17. The implant of claim 14, wherein the scaffold further comprises at least one bioactive agent applied thereto.

18. The implant of claim 17, wherein the at least one bioactive agent is selected from the group consisting of growth factors, matrix proteins, peptides, antibodies, enzymes, platelets,

platelet rich plasma, glycoproteins, hormones, glycosaminoglycans, nucleic acids, analgesics, viruses, virus particles, cytokines and isolated cells and combinations thereof.

19. The implant of claim 14, further including a plurality of tissue slices and a plurality of tissue scaffolds joined together to form a layered implant of a desired size and geometry.

20. A method for repairing a tissue injury or defect, comprising:

providing a biocompatible tissue implant comprising a biological tissue slice having a geometry suitable for implantation at a tissue injury or defect site, the tissue slice including an effective amount of viable cells, and further being dimensioned so that the cells can migrate out of the tissue slice to proliferate and integrate with tissue at the tissue injury or defect site; and

delivering the implant to the tissue site to be repaired.

21. The method of claim 20, wherein the biocompatible tissue implant is in the form of a plurality of tissue slices joined together to form a layered implant of a desired size and geometry.

22. The method of claim 20, further including the step of applying the tissue slice to a biocompatible tissue scaffold to form a composite implant prior to the delivering step, and the step of delivering the implant comprises delivering the composite implant to the tissue site to be repaired.

23. The method of claim 20, further including the step of applying a bioactive agent to the implant either before or after delivery.

24. The method of claim 23, wherein the bioactive agent is selected from the group consisting of growth factors, matrix proteins, peptides, antibodies, enzymes, platelets, platelet rich plasma, glycoproteins, hormones, glycosaminoglycans, nucleic acids, analgesics, viruses, virus particles, cytokines and isolated cells and combinations thereof.

25. The method of claim 20, further including the step of securing the biocompatible tissue implant to the tissue site using a retaining element selected from the group consisting of fasteners, staples, tissue tacks, sutures, adhesives, and combinations thereof.

26. The method of claim 20, further including the step of applying at least one minced tissue fragment containing a plurality of viable cells to the tissue implant prior to the delivering step.

27. The method of claim 26, wherein the at least one minced tissue fragment is applied in a biological or synthetic hydrogel selected from the group consisting of hyaluronic acid, fibrin glue, fibrin clot, collagen gel, collagen-based adhesive, alginate gel, crosslinked alginate, chitosan, synthetic acrylate-based gels, platelet rich plasma (PRP), platelet poor plasma (PPP), PRP clot, PPP clot, blood, blood clot, Matrigel, agarose, chitin, chitosan, polysaccharides, poly(oxyalkylene), a copolymer of poly(ethylene oxide)-poly(propylene oxide), poly(vinyl alcohol), laminin, elastin, proteoglycans, solubilized basement membrane, or combinations thereof.